

BIOGRAPHICAL SKETCH

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NAME: Gutierrez, Jose

eRA COMMONS USER NAME (credential, e.g., agency login): josegc

POSITION TITLE: Florence Irving Assistant Professor of Neurology

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	END DATE MM/YYYY	FIELD OF STUDY
University of Guadalajara, Tamazula, Jalisco	BS	07/1997	Biological science
University of Guadalajara, Guadalajara, Jalisco	MD	12/2004	Medicine
Florida International University, Miami, FL	MPH	04/2011	Epidemiology/ major in Biostatistics
Universidad Autonoma de Mexico, Mexico, DF	Resident	06/2007	Internal Medicine
New York Medical College, New York, NY	Resident	06/2008	Internship
University of Miami, Miami, FL	Resident	06/2011	Neurology
Columbia University, New York, NY	Postdoctoral Fellow	06/2012	Vascular Neurology
Columbia University, New York, NY	Postdoctoral Fellow	06/2013	Advanced Vascular Neurology

A. Personal Statement

I am a fellowship-trained Vascular Neurologist and Epidemiologist. I have a keen interest in stroke risks and mechanisms at a population level, specifically among those with HIV I have published more than 15 first-authored manuscripts on this topic. My experience in Neuro AIDS comes from my role in the Brain Arterial Remodeling Study (BARS) as Principal Investigator. I will use my expertise in Neuro AIDS in this application to further advance the knowledge of HIV infection may influence cerebrovascular disease and cognitive impairment in the HIV population.

- Gutierrez J, Byrd D, Yin MT, Morgello S. Relationship Between Brain Arterial Pathology and Neurocognitive Performance Among Individuals With Human Immunodeficiency Virus. Clin Infect Dis. 2019 Jan 18;68(3):490-497. PubMed PMID: [30107467](#); PubMed Central PMCID: [PMC6336905](#).
- Gutierrez,Jose,, Albuquerque,Ana Let?cia A., Falzon,Louise,. HIV infection as vascular risk: A systematic review of the literature and meta-analysis. PLOS ONE. 2017; 12(5):e0176686-.
- Gutierrez J, Menshaw K, Goldman J, Dwork AJ, Elkind MS, Marshall RS, Morgello S. Metalloproteinases and Brain Arterial Remodeling Among Individuals With and Those Without HIV Infection. J Infect Dis. 2016 Nov 1;214(9):1329-1335. PubMed PMID: [27549585](#); PubMed Central PMCID: [PMC5079372](#).
- Gutierrez J, Goldman J, Dwork AJ, Elkind MS, Marshall RS, Morgello S. Brain arterial remodeling contribution to nonembolic brain infarcts in patients with HIV. Neurology. 2015 Sep 29;85(13):1139-45. PubMed PMID: [26320196](#); PubMed Central PMCID: [PMC4603890](#).

B. Positions and Honors

Positions and Employment

2012 - 2013	Assistant in Clinical Neurology, Columbia University College of Physicians and Surgeons, New York, NY
2013 - 2019	Assistant Professor in Neurology, Columbia University College of Physicians and Surgeons, New York, NY
2019 -	Florence Irving Assistant Professor of Neurology, Columbia University Irving Medical Center, New York, NY

Other Experience and Professional Memberships

Honors

2006	Residency Performance Award, UNAM/ Gabriel Mancera IMSS
2010	Research chief resident, Department of Neurology, Miller School of Medicine, University of Miami
2011	Resident Research Award, Department of Neurology, Miller School of Medicine, University of Miami
2012	Research career development for new HIV/AIDS investigators, NIMH
2013	Certificate of excellence in reviewing, Elsevier
2014	Travel award for Junior Investigators , American Heart Association, International Stroke Conference
2015 - 2017	Chair of the Cerebrovascular Disease Working Group, AIDS Clinical Trials Group (ACTG)
2017	2017 AIDS Clinical Trials Group (ACTG) minority Investigator award, AIDS Clinical Trials Group (ACTG)
2019	Brain Health Science Subcommittee member, Stroke Council Leadership Committee of the American Heart Association/American Stroke Association
2019	Chair for the Cerebral Large Artery Disease section, International Stroke Conference, American Heart Association

C. Contribution to Science

1. The incidence of vascular disease among patients infected with HIV is rising. The etiology of stroke among patient with HIV is heterogeneous, and some of the frequent causes of stroke cited in this group include HIV vasculopathy. There are only a few reports where cerebral brain arteries have been assessed systematically for changes among patients with and without HIV. While in residency, I approached the study of HIV vasculopathy first with pathology. In a small pilot study, I found that a thinner media may be a mediator for subsequent arterial dilatation typically seen in patients with HIV. Then, I reported that brain large arteries from patients with HIV had higher lumen-to-wall ratios compared to uninfected controls, suggestive of an HIV-mediated predisposition to dilatation. This predisposition appears to affect mostly large arteries and presence clinically with fusiform dilatations of cerebral brain arteries, which may help in the diagnoses of this arteriopathy.
 - a. Hunter MD, Shenoy A, Dwork A, Elkind MSV, Marshall R, Mohr JP, Morgello S, Gutierrez J. Brain vascular intima vulnerability among HIV-positive and negative individuals. *AIDS*. 2018 Sep 24;32(15):2209-2216. PubMed PMID: [30005012](#); PubMed Central PMCID: [PMC6136984](#).
 - b. Gutierrez J, Byrd D, Yin MT, Morgello S. Relationship Between Brain Arterial Pathology and Neurocognitive Performance Among Individuals With Human Immunodeficiency Virus. *Clin Infect Dis*. 2019 Jan 18;68(3):490-497. PubMed PMID: [30107467](#); PubMed Central PMCID: [PMC6336905](#).
 - c. Gutierrez J, Goldman J, Dwork AJ, Elkind MS, Marshall RS, Morgello S. Brain arterial remodeling contribution to nonembolic brain infarcts in patients with HIV. *Neurology*. 2015 Sep 29;85(13):1139-45. PubMed PMID: [26320196](#); PubMed Central PMCID: [PMC4603890](#).

- d. Gutierrez, Jose, Menshawy, Khaled, Gonzalez, Marco, Goldman, James, Elkind, Mitchell, SV, Marshall, Randolph, S, Morgello, Susan. Brain large artery inflammation associated with HIV and large artery remodeling. *AIDS* (London, England). 2015;
2. Dolichoectasia is an arteriopathy frequently encountered in old individuals with vascular risk factors. It is characterized by tortuosity and dilatation of cerebral arteries. The study of dolichoectasia has consisted mainly on case-reports and hospital-based samples. I lead an effort to study dolichoectasia at a population-based level that included stroke-free participants: The Northern Manhattan Study. Some of the most important scientific contributions from this work include: 1) brain arterial diameters are influenced by head size, and ignoring this fact may lead to underestimate the prevalence of Dolichoectasia in women, 2) Dolichoectasia may occur as a compensation to smaller arteries from the Circle of Willis or the intracranial posterior circulation, or 3) as a compensatory mechanism to extracranial carotid atherosclerosis. These reports have led to the idea of primary dolichoectasia in the setting of unknown mechanism for dilatations, and secondary dolichoectasia, for example in the setting of atherosclerosis ("compensatory dolichoectasia"), or due to genetic or acquired disorders associated with a weakened arterial wall.
- a. Gutierrez J, Honig L, Elkind MS, Mohr JP, Goldman J, Dwork AJ, Morgello S, Marshall RS. Brain arterial aging and its relationship to Alzheimer dementia. *Neurology*. 2016 Apr 19;86(16):1507-15. PubMed PMID: [26984942](#); PubMed Central PMCID: [PMC4836884](#).
- b. Gutierrez J, Cheung K, Bagci A, Rundek T, Alperin N, Sacco RL, Wright CB, Elkind MS. Brain Arterial Diameters as a Risk Factor for Vascular Events. *J Am Heart Assoc*. 2015 Aug 6;4(8):e002289. PubMed PMID: [26251284](#); PubMed Central PMCID: [PMC4599479](#).
- c. Gutierrez J, Bagci A, Gardener H, Rundek T, Elkind MS, Alperin N, Sacco RL, Wright CB. Dolichoectasia diagnostic methods in a multi-ethnic, stroke-free cohort: results from the northern Manhattan study. *J Neuroimaging*. 2014 May-Jun;24(3):226-31. PubMed PMID: [23317292](#); PubMed Central PMCID: [PMC4397482](#).
- d. Gutierrez J, Sultan S, Bagci A, Rundek T, Alperin N, Elkind MS, Sacco RL, Wright CB. Circle of Willis configuration as a determinant of intracranial dolichoectasia. *Cerebrovasc Dis*. 2013;36(5-6):446-53. PubMed PMID: [24281350](#); PubMed Central PMCID: [PMC4370622](#).
3. The biology of the brain large areas is not well understood. In an effort to further the study of brain arterial biology, I led a project to assemble a collection of brain large and penetrating arteries called the "Brain Arterial Remodeling Study (BARS)" to test the assumptions about brain arterial biology previously. We have learned from the BARS that as the brain arteries further into the brain, their walls become relatively thicker and the lumen decreases. We have also reported that the single most important variable affecting the proportion of the media, the lumen and the adventitia of cerebral arteries is the arterial size, thus underlying the need to adjust for size when studying intracranial arteries. We have reported that contrary to what is observed in coronary arteries, large brain arteries do not undergo outward remodeling in the setting of atherosclerosis; in fact, large brain arteries may in fact undergo a proportional reduction in the lumen with any degree of intima thickening. We have also reported that atherosclerosis lesions typically considered of high risk can be harbored in arteries with relatively low degree of stenosis, disclosing the need for better methods to account for the true atherosclerotic burden other than solely based on the lumen.
- a. Shapiro SD, Goldman J, Morgello S, Honig L, Elkind MSV, Marshall RS, Mohr JP, Gutierrez J. Pathological correlates of brain arterial calcifications. *Cardiovasc Pathol*. 2019 Jan - Feb;38:7-13. PubMed PMID: [30399527](#); PubMed Central PMCID: [PMC6294705](#).
- b. Roth W, Morgello S, Goldman J, Mohr JP, Elkind MS, Marshall RS, Gutierrez J. Histopathological Differences Between the Anterior and Posterior Brain Arteries as a Function of Aging. *Stroke*. 2017 Mar;48(3):638-644. PubMed PMID: [28196941](#); PubMed Central PMCID: [PMC5330785](#).
- c. Gutierrez J, Goldman J, Honig LS, Elkind MS, Morgello S, Marshall RS. Determinants of cerebrovascular remodeling: do large brain arteries accommodate stenosis?. *Atherosclerosis*. 2014 Aug;235(2):371-9. PubMed PMID: [24929285](#); PubMed Central PMCID: [PMC4121968](#).
- d. Gutierrez J, Rosoklija G, Murray J, Chon C, Elkind MS, Goldman J, Honig LS, Dwork AJ, Morgello S, Marshall RS. A quantitative perspective to the study of brain arterial remodeling of donors with and

without HIV in the Brain Arterial Remodeling Study (BARS). Front Physiol. 2014;5:56. PubMed PMID: [24600402](https://pubmed.ncbi.nlm.nih.gov/24600402/); PubMed Central PMCID: [PMC3928551](https://pubmed.ncbi.nlm.nih.gov/PMC3928551/).

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

1R01AG057709 (Gutierrez) NIH-NIA <i>Genetic Contribution to Brain Arterial Dilatation and its Role in Cognition and dementia</i> The goal of this study is to determine the role of brain arterial dilatation in Alzheimer dementia. Role: PI	08/15/2018 – 4/30/2023 \$572,572	4.2 CM
1R01AG066162 (Gutierrez) NIH-NIA <i>Accelerated non-atherosclerotic brain arterial aging relationship to Alzheimer's disease</i> The goal of this study is the goals of this project are 1) to integrate a pathophysiological model that explains the risk of AD attributable to non-atherosclerotic brain arterial aging, 2) to establish brain arterial aging as a novel therapeutic target for decreasing the risk of AD, and 3) to identify molecular pathways and molecular candidates for future interventions. Role: PI	09/01/2019-08/31/2024 \$400,000	2.4 CM
RF1 AG054023 (Mayeux) NIH/NIA <i>Genetic Epidemiology of Cerebrovascular Factors in Alzheimer's Disease</i> The goal of this study is to test hypotheses concerning how genetic variants, cardio-cerebrovascular risk factors and cerebrovascular disease predispose to LOAD and whether these relationships differ by ethnic group. This study will utilize imaging and sequencing data from the longitudinal Washington Heights, Inwood and Columbia Aging Project (WHICAP). Role : Co-I	08/01/2016-06/30/2021 \$1,100,101	1.2 CM
6R01 NS029993-23 (Sacco/ Elkind) NIH/NINDS <i>Risk Factors for Stroke and Cognitive Decline in a Tri-Ethnic Region</i> The aim of this grant is to determine the relationship between brain imaging biomarkers (regional brain volumes, regional white matter lesion burden, hippocampal volumes, cortical thickness, small dilated perivascular spaces, dolichoectasia) and cognitive trajectories and dementia. Role : Co-I	09/30/15-07/31/20 \$747,721(subcontract DC)	0.6 CM
RF1AG054070 (Manly/Brickman) NIH <i>Offspring Study of Mechanisms for Racial Disparities in Alzheimer's Disease</i> The overall aim of this study is to identify biological and sociocultural mechanisms of racial/ethnic disparities in cognitive function among middle-aged people with and without a parent with Alzheimer's Disease. Role : Co-I	07/01/2016-06/30/2021 \$1,145,457	1.6 CM
1R01NS099268-01A1 (Kim) NIH/NINDS <i>Long-term outcomes in unruptured brain arteriovenous malformation patients</i> To identify predictors of brain hemorrhage and poor outcomes among those patients who are found to have an arteriovenous malformation in their brains and remain untreated or undergo treatment. Role: Co-I	05/15/2017 – 04/30/2022 \$136,856(subcontract DC)	1 CM
RF1AG058067 (Manly/Brickman) NIH <i>TAU PET Imaging in Racially/Ethnically Diverse Middle-Aged Adults</i>	09/01/2018-06/30/2023 \$2,394,420	0.7 CM

The goal of this study is to examine the role of cerebrovascular disease in promoting AD pathology to provide novel mechanistic insight into these disease and help identify new targets for intervention during midlife.

Role : Co-I

Completed Research Support

0003121220 , The Campbell Foundation

Gutierrez, Jose (PI)

10/01/15-10/01/16

Arterial wall infection by HIV as a trigger for arterial wall inflammation

The aim of this grant is to investigate there exist direct infection of HIV to the arterial wall and demonstrate that the arterial wall infection by HIV is an antigenic stimuli for macrocytic and lymphocytic arterial infiltrates.

Role: PI

13CRP14800040, American Heart Association

Gutierrez, Jose (PI)

01/01/13-12/31/14

Contribution of HIV infection to intracranial vascular remodeling: a case –control study

Role: PI

5R25MH080663-05 , Nationa Institute of Mental Health

Susan Morgello (PI)

06/01/12-06/30/13

Mount Sinai Summer Institute for NeuroAIDS Disparities (MSINAD) 2012 scholar grants

Role: TA

5T32AI007387-27 , NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES

Kuritzkes, Daniel R (PI)

07/01/16-06/30/17

MULTIDISCIPLINARY AIDS TRAINING PROGRAM

HIV infection has been associated with brain arterial dilatation, a radiographic phenotype also known as “HIV-vasculopathy” or “HIV-related Dolichoectasia”. Understanding the relationship between HIV-related Dolichoectasia with cerebrovascular disease and cognitive performance has broad implication for the prevention of HIV-related stroke and HIV-associated neurocognitive disorders (HAND). With this sub award, we aim to characterize cognitive impairments and biomarkers in HIV-infected patients with HIV-related brain arterial dilatation.

Role: TA